GOVERNMENT OF INDIA
ATOMIC ENERGY
LOK SABHA

STARRED QUESTION NO:81
ANSWERED ON:21.11.2007
USE OF THORIUM AS FUEL
Pandey Dr. Laxminarayan;Singh Shri Rajiv Ranjan (Lalan)

Will the Minister of ATOMIC ENERGY be pleased to state:

(a) whether Thorium can be used as a fuel for generation of atomic energy in the country;

(b) if so, the details thereof;

(c) the estimated quantity of Thorium available in the country at present, state-wise;

(d) whether the government has formulated any scheme for generating nuclear power through Thorium;

(e) if so, the details thereof; and

(f) the capacity of power projects which can be established in the country by using Thorium?

Answer

THE MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE (SHRI PRITHVIRAJ CHAVAN)

(a) to (f) A statement is laid on the Table of the House

STATEMENT REFERRED TO IN REPLY TO LOKSABHA STARRED QUESTION NO.81 BY SHRI RAJIV RANJAN SINGH LALAN AND DR.LAXMINARAYAN PANDEY FOR ANSWER ON 21.11.2007

a) Yes, Sir.

b) While Thorium by itself is not a fissionable material, on irradiation in a reactor, it can be converted to Uranium-233 which can be used to produce nuclear energy. India has vast resources of Thorium and thus it offers an enormous energy source to meet our future requirements. Utilization of Thorium for energy production in the long run is one of the most important objectives of our atomic energy programme.

c) Estimated reserves of Monazite which contains about 8% Thorium, in different states are as follows:

State	# Resources (in million tonnes)
Andhra Pradesh	3.73
West Bengal & Jharkhand	1.45
Kerala	1.37
Tamil Nadu	1.84
Orissa	1.82
TOTAL	10.21#

Inclusive of indicated, inferred and speculative reserves.

d) & e) Yes, Sir. India has formulated a three stage nuclear power programme to optimally use its modest uranium and vast thorium resources. Large scale thorium utilization is contemplated in the third stage of this programme, where Uranium-233 bred in Fast Breeder Reactors of the second stage, will be used together with thorium.
The government has taken a number of steps to develop appropriate technologies for the utilization of thorium. A few of the major steps are:

1) Setting up the research reactor Kamini at Kalpakkam using Uranium-233 fuel obtained from irradiated thorium. The reactor has

been operating since 1997. The fuel for the reactor is bred, reprocessed and fabricated indigenously.

2) Irradiation of thorium fuel bundles in research reactor at Trombay and in Pressurised Heavy Water Reactors (PHWRs) has been carried out.

3) Design and development of Advanced Heavy Water Reactor (AHWR) using thorium based fuel. This reactor will serve as a technology demonstrator.

f) Around 150,000 GW-yr electricity potential exists in India using domestic thorium through the route of breeder technology.